



Validation report form for renewal of GS programme of activities

VALIDATION REPORT FOR RENEWAL OF PoA

Title of the programme of activities (PoA)	Nepal Biogas Support Program-PoA
GS reference number of the PoA	3110
UNFCCC reference number (if any)	9572
Version number of the validation report for renewal of PoA	1.0Aa
Completion date of the validation report for renewal of PoA	11/11/2019
Version number of the PoA-DD applicable to this validation report	02 of 07/11/2019
Coordinating/managing entity (CME)	Alternative Energy Promotion Centre
Host Party(ies)	Nepal
Sectoral scope(s)	1: Energy industries (renewable - / non-renewable sources)
Selected methodology(ies)	AMS.I.E. Switch from non-renewable biomass for thermal applications by the user (Version 09.0)
Name of DOEs	RINA Services S.p.A. (RINA)
Name, position and signature of the approver of the validation report for renewal	Laura Severino (Authorized officer signing for the DOE) Head of Certification Innovation & Sustainability Unit 

SECTION A. Executive summary

Purpose and general description of the PoA:

The Programme of activities involves the implementation of biogas applications at individual households in Nepal. The different sizes of the digesters included in the programme are 2, 4, 6, 8 and 10 m³. The programme uses only one design i.e. GGC 2047 model. Each digester replaces fire-wood which otherwise would have been used for household thermal application (cooking/heating). Thereby, the PoA reduces GHG emissions from firing of fire-wood at household level. The programme is managed by Alternative Energy Promotion Centre with the support of Biogas Sector Partnership Nepal (BSP-Nepal) and other support partners, the implementing agency of AEPC.

Location:

The programme of activities are implemented in rural households throughout Nepal.

Scope of Validation

The validation scope is to review the updated PoA-DD against the GS principles and requirements. The validation of the renewal of crediting period is also to be seen in conjunction with the CDM validation report at the time of requesting registration of the PoA (TUV Sud – Validation Report No. 600500123 version 06 of 31/01/2013). Validation of the renewal of crediting period is a requirement and it is seen as necessary to provide assurance about:

- (a) the impact of new relevant national and/or sectoral policies and circumstances on the baseline;
- (b) the correctness of the application of an approved baseline methodology for the determination of the continued validity of the baseline or its update, and the estimation of emission reductions for the applicable crediting period.

Validation process

Validation is conducted using RINA procedures in line with the GS requirements and principles and applying standard auditing techniques. The validation assessment involved a document review of relevant documentation, the interview and/or on-site visit and reporting. Validation is not meant to provide any consultancy toward the project participants. However, stated request for clarifications and/or corrective actions may have provided input for improvement of the PoA.

Conclusion

RINA commissioned by Alternative Energy Promotion Centre (AEPC) has performed the validation of the renewal of crediting period of the PoA 'Nepal Biogas Support Program-PoA', with regard to the relevant GS requirements and principles for PoA. The PoA is also registered under UNFCCC with reference number 9572 and request for renewal of crediting period with positive validation is submitted UNFCCC.

In conclusion, it is RINA's opinion that the PoA 'Nepal Biogas Support Program-PoA' as described in the PoA-DD version 02 of 07/11/2019, meets all relevant GS requirements and principles, and correctly applied the baseline and monitoring methodology AMS.I.E 'Switch from non-renewable biomass for thermal applications by the user' version 09.0 of 31/08/2018.

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader	IR	Menon	Rekha	RINA India	✓	X	✓	✓
2.	Validator & technical expert (TA 1.1)	IR	Buragohain	Champak	RINA India	✓	✓	✓	✓

3.	Technical Expert (TA 1.1)	IR	Augustus	Cyril	RINA India	√	X	√	√
----	---------------------------	----	----------	-------	------------	---	---	---	---

B.2. Technical reviewer and approver of the validation report for renewal

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Liu	Hui Feng	RINA CHINA
2.	Approver	IR	Severino	Laura	RINA HQ

SECTION C. Means of validation

C.1. Desk review

The updated GS PoA-DD version 01 of 12/04/2019 and version 02 of 23/10/2019, updated CDM PoA-DD version 17 of 05/09/2019 /01/, in particular the applicability of the methodology, the baseline determination, the emission reductions calculation, the sustainability indicators, were assessed as part of the validation. All documents reviewed or referenced during the validation are listed in Appendix 3.

C.2. On-site inspection

Duration of on-site inspection: 30/04/2019 to 02/05/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting	AEPC office, Kathmandu	30/04/2019	Champak Buragohain
2.	On-site inspection/interview with CME/ representative and operation team/ discussion with end users	Rautahat, Mahottari, Chitwan, Chindhuli, Bara, Sarlahi, Makwanpur districts	01/05/2019-02/05/2019	Champak Buragohain
3.	Discussions on findings/closing meeting	Kathmandu	02/05/2019	Champak Buragohain

C.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Adhikari	Madhusudhan	AEPC (Executive Director)	30/04/2019	Opening meeting, project implementation, operation and maintenance, roles and responsibilities etc.	Champak Buragohain
2.	Dhakal	Nawa Raj	AEPC (Director)			
3.	Pokhrel	Prem Kumar	AEPC (Climate and Carbon Financing Expert)	30/04/2019 to 02/05/2019	MR preparation, emission reduction calculation, GS requirements, monitoring results etc.	Champak Buragohain
4.	End users		24 end users across all CPAs	01/05/2019 to 02/05/2019	Operational status of biogas plants, sustainable development parameters, other benefits, downtime details etc.	Champak Buragohain
5.	Paudel	Nobaraj	Rupli R.E.S. Pvt. Ltd. (Biogas Company)			
6.	Rinal	Subeth	Heteeda Biogas Company Pvt. Ltd.			
7.	Karki	Saroj	Officer AEPC (biogas component)			

C.4. Clarification requests, corrective action requests and forward action requests raised

Area of validation findings	No. of CR	No. of CAR	No. of FAR
Part I			
Compliance with PoA-DD form			
Compliance with GS PoA Passport form			
CME and project participants			
Eligibility criteria for inclusion of CPAs in the PoA		1	
Application of baseline and monitoring methodology and standardized baseline			
Post-registration changes			
Part II			

Application of baseline and monitoring methodology and standardized baseline	1		
Demonstration of eligibility for a generic CPA			
Validity of original baseline or its update			
Sustainable Development assessment			
Validity of monitoring plan			
Validity of the sustainability monitoring plan			
Total	1	1	0

SECTION D. Internal quality control

The draft final validation report before being submitted to the client is subjected to an independent technical review to confirm that all validation activities has been completed according to the pertinent RINA's procedures. The technical review is performed by a technical reviewer(s) qualified in accordance with the RINA's qualification procedure.

SECTION E. Validation opinion

RINA has performed the validation of the updated GS PoA-DD for the PoA 'Nepal Biogas Support Program-PoA' in Nepal, GS Registration Reference No. 3110; the validation is performed for the 2nd renewal crediting from 31/01/2020 to 30/01/2027.

The review of the updated GS PoA-DD version 02 and follow-up interviews have provided RINA with sufficient evidence to determine the validity of the original baseline and the sustainable indicators; the PoA correctly applied the baseline and monitoring methodology AMS.I.E 'Switch from non-renewable biomass for thermal applications by the user' version 09.0 of 31/08/2018

In conclusion it is RINA's opinion that the PoA meets all the relevant GS requirements for renewal of the 2nd crediting period from 31/01/2020 to 30/01/2027.

SECTION F. Validation findings - Part I: Programme of activities

F.1. Generic VPA(s)

Title, identification/reference number and/or version number	Sectoral scope(s)	Selected methodology(ies)
Not Applicable		

F.2. Compliance with PoA-DD form

Means of validation	The PoA-DD was cross-checked with the latest PoA-DD template available at GS and with the instructions for filling out
Findings	N/A
Conclusion	RINA confirms that the updated PoA-DD is in compliance with the latest version of the PoA-DD form (version 01, July 2017) and the instructions therein for filling out the PoA-DD form. RINA also confirms that the CME has updated the relevant sections of the PoA-DD in accordance with the relevant requirements in the Project Standard for PoA. RINA further confirms that the information transferred to the updated version of the PoA-DD is materially the same as that in the registered PoA-DD.

F.3. Compliance with GS PoA Passport form

Means of validation	Not applicable
Findings	N/A
Conclusion	N/A

F.4. CME and project participants

Means of validation	Cross checking the CME and project participants name from the list of project participants and CME of the PoA from the view page at UNFCCC website and latest MoC statement. RINA also reviewed the letter of approval (Ref.838) dated: 31/12/2009 issued from the DNA of Nepal authorizing AEPC as CME and letter of approval from NDA of Germany (dated 16/11/2017) authorizing First Climate
----------------------------	---

	Markets AG as project participant and letter of approval dated 09/02/2015 from DNA of Germany authorizing Atmosfair gGmbH as project participant. The latest MoC dated: 17/04/2019 to confirm the name of the project participant. The PoA-DD is updated accordingly.
Findings	N/A
Conclusion	RINA confirms that the CME and project participants of the PoA is listed in the updated PoA-DD and this information is consistent with registered PoA-DD and information available at GS for the PoA.

F.5. Eligibility criteria for inclusion of VPAs in the PoA

Means of validation	The managing entity employs clear and unambiguous criteria for the inclusion of the CPA/VPA. The eligibility criteria's have been stated are in line with the applicability of the applied methodology AMS.I.E version 09. Following has been included as eligibility criteria for CPAs/VPAs to this PoA – 1. Geographical boundary - The CPAs has to be implemented within geographical boundary of Nepal 2. Double counting - requirement is to allocated unique identification no, to each digester & CPA/VPA, geographical location of CPA/VPA and checking of CDM website 3. Technology – All digester that meets the description as listed in PoA will only be qualify for CPAs/VPAs to be included. 4. CPA Start date - Shall be later than 22nd June 2007 5. Compliance with applied methodology – Households that used firewood would be considered in this project. Furthermore, the CPA/VPA shall meet all applicability criteria of applied methodology i.e AMS I.E, Version 09. 6. Diversion of ODA – CPA/VPA implementation should not result in ODA diversion 7. Target Group and distribution mechanism – Target group is household having at least one cattle head and a direct home to home installation should be done 8. Threshold check - Not more than 20,000 digester shall be implemented within one CPA/VPA. 9. Local stakeholder consultations and environmental impact analysis - A local stakeholder consultation has been carried out at PoA level. 10. Others – each digester user should have signed agreement relinquishing the carbon rights to AEPC and it should be a voluntary action
Findings	CAR 01 was raised to clarify the the reason for not considering additionality as eligibility criteria for inclusion of CPA/VPA in PoA to which PP clarified that the PoA is deemed additional as described in the PoA DD and hence additionality is not discussed. Further in consistent with requirements for renewal of crediting period, additionality is not required to discuss. Hence, CAR is closed.
Conclusion	RINA confirms that the eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs/VPAs in the PoA. The eligibility criteria will be checked at each CPA/VPA inclusion by the CME and shall be confirmed by the DOE to be fulfilled during CPA/VPA inclusion. The eligibility criterias are consistent with the first crediting period.

F.6. Post-registration changes

Type of post-registration changes (PRCs)	Confirmation (Y/N)
Corrections	N
Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline	N
Changes to the project design of a registered programme of activities	N
Changes to project design of generic component project activities or specific-case component project activities	N
Types of changes specific to afforestation and reforestation project activities	N

SECTION G. Validation findings- Part II: Generic voluntary project activity under PoA (VPA)

G.1. General description of the generic VPA

>>The component activities involves the implementation of biogas applications at individual households in Nepal. The different sizes of the digesters included in the programme are 2, 4, 6, 8 and 10 m3. The programme uses only one design i.e. GGC 2047 model. Not more than 20,000 digester shall be implemented within one CPA/VPA. Each digester replaces fire-wood which otherwise would have been used for household thermal application (cooking/heating). Thereby, the activities reduces GHG emissions from firing of fire-wood at household level. The programme is managed by Alternate Energy Promotion Centre with the support of Biogas Sector Partnership Nepal (BSP-Nepal), the implementing agency of AEPC.

G.2. Application of baseline and monitoring methodology

Means of validation	The CME has applied the methodology AMS-I.E Version 09. This version of the methodologies is the latest version and currently valid for the submission of the PoA. The PoA meets the criteria defined in the baseline methodology as described below:	
	Criteria	Means of verification
	This methodology comprises of activities to displace the use of non-renewable biomass by introducing renewable energy technologies. Examples of these technologies include, but are not limited to biogas stoves, bio-ethanol stoves, solar cookers, passive solar homes.	The project technology involves household biogas system (renewable) which replaces use of non-renewable biomass. There is no change in the design of the program technology and hence meets the methodology requirement.
	Project participants are able to show that non-renewable biomass has been used since 31 December 1989, using survey methods or referring to published literature, official reports or statistics.	As per latest biogas user survey conducted by CME in 2018 for the program confirms the use of non-renewable biomass since 31 december 1989. The finding that NRB was used is also backed by independent report such as "The Environmental Impact of Poverty: Evidence from Firewood Collection in Rural Nepal"/14/.
	Project participants or coordinating and managing entities shall describe in the PDD/PoA-DD how the double counting of emission reductions has been addressed (e.g. between end users, distributors and producers of stoves)	PP has addressed the double counting issue by way of applying a unique code for each Digester which shall not be repeated and recorded in the database. Each Digester's will also be segregated according to the CPA in the database system which will help to differentiate the digesters according to respective CPA. All digesters implemented under the Biogas Support Program are listed in the database and hence the database system will help to prevent double counting of the digester since the database will not accept the same unique code twice. Therefore, the DOE confirmed using the system already in place that double-counting will not occurred as will be detected automatically by the system.

	For project activities introducing bio-ethanol cookstoves, project participants or coordinating and managing entities shall demonstrate that the bioethanol cookstoves are designed, constructed and operated to the requirements (e.g. with regard to safety) of a relevant national or local standard or comparable literature. Latest guidelines issued by a relevant national authority or an international organisation may also be used.	The PoA does not include the bio-ethanol cookstoves and hence this is not applicable for this PoA.	
Findings	N/A		
Conclusion	RINA hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein and the selected version is valid at the time of submission of the proposed PoA for renewal of crediting period. It is also confirmed that the methodology is correctly applied by comparing it with the actual text of the applicable version of the methodology and there is no deviation from the selected methodology.		

G.3. Validity of original baseline or its update

Means of validation	The CME has included the assessment of the validity of the original baseline as per the tool “Assessment of the validity of the original/ current baseline and update of the baseline at the renewal of a crediting period”, Version 3.0.1 /10/, which has been concluded to be still valid and applicable for the PoA The tool consists of two steps. The first step provides an approach to evaluate whether the current baseline is still valid for the next crediting period. The second step provides an approach to update the baseline in case that the current baseline is not valid anymore for the next crediting period. Step 1: Assess the validity of the current baseline for the next crediting period Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies There is no mandatory legal requirement for installation of biogas system in households of Nepal. The policies relevant to the program are ‘the Rural Energy Policy’, ‘the Renewable (Rural) Energy Subsidy Policy’ and ‘the Renewable (Rural) Energy Subsidy Delivery Mechanism’. The Renewable (Rural) Energy Subsidy Policy 2016 has made provisions of financial subsidy support for the installation of the household biogas plants. The above policies only provide the incentives for the installation of household biogas plants and do not provide any obligations or enforced targets, nor do they ban the use of fuel wood for cooking. Therefore, the baseline (use of non-renewable biomass) is still valid as per the original registered PoA and that original baseline scenario will remain valid for next crediting period. Step 1.2: Assess the impact of circumstances The PoA involves household biogas plants replacing firewood based cooking system. In the absence of the PoA, firewood would have been used for cooking purpose. There are no new national/sectoral policies/legislation/circumstance that could affect the baseline scenario during the renewal of the crediting period. There is no change observed in this regard and it can be concluded that the conditions used to determine the baseline emissions in the previous crediting period are still valid. Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested. The baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment. The continuation of the current practice does not need any further investment. The baseline scenario identified during validation confirmed that NRB is used in Nepal since 31 December 1989. A recent survey by CME in 2018 /15/ confirms the NRB use with following
----------------------------	---

indicators: Increase in time needed to gather firewood or increase in distance travelled to gather firewood and Increasing trend in fuel wood price. These scenarios justifies that the baseline scenario is not impacted during the renewal of crediting period.

Step 1.4: Assessment of the validity of the data and parameter

“Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity”.

Following data parameters are updated from registered PoA-DD:

Data/Parameter	Value in registered PoA-DD	Value in updated PoA-DD	Assessment
Emission factor for the projected fossil fuel consumption in the baseline ($EF_{\text{projected_fossilfuel}}$)	81.6	63.7	The updated value is in consistent with latest applied methodology AMS-I.E, version 9. Hence, accepted
Fraction of woody biomass saved by the project activity during year y that can be established as non-renewable biomass ($f_{\text{NRB},y}$)	86%	86.1%	The value is calculated as per tool ‘Calculation of the fraction of non-renewable biomass’ consistent with the applied methodology. The value is further approved validated by the Ministry of Forest and Environment, Government of Nepal /16/. Hence, accepted.
The quantity of woody biomass substituted or displaced per household (B_y)	3.3	4.5	The value is updated considering latest user survey prior to renewal of crediting period. The survey was carried out covering year 2017-18 which resulted the fire-wood consumption in absence of biogas is 4.5 ton/household per year /15/. In consistent with the methodology to determine ‘ B_y ’ as per equation 2 ($B_y = N_{\text{HH}} * (BC_{\text{BL,HH},y} - BC_{\text{PJ,HH},y})$),

				BC _{BL,HH,y} is fixed ex-ante as described in section D.2.3 below and BC _{PJ,HH,y} shall be monitored.
	Considering the guidance provided under this step, calculation of emission factor and baseline emissions are updated for the next crediting period as per step 2. Step 2: Update the current baseline and the data and parameters Since, the existing baseline scenario is still valid, this step is not applicable. Finally, it is concluded that the original baseline scenario is valid and assessment is complete as per “Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period v3.0.1’.			
Findings	CL 01 was raised to clarify the basis on which quantity of woody biomass substituted or displaced per household is updated to which CME has provided valid justification and source of the same. Hence, CL is closed.			
Conclusion	RINA concludes that the original baseline is valid and assessment is done as per methodological tool ‘Tool for the assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period v3.0.1’.			

G.3.1. Estimated emission reductions or net anthropogenic removals

Means of validation	The emission reductions for the project activity is estimated as per equation 6 of AMS-I.E version 09 as follows: $ER_y = BE_y - PE_y - LE_y$ Where: ER_y = Emission reductions during year y in t CO₂e BE_y = Baseline Emissions PE_y = Project Emissions LE_y = Leakage Emissions Baseline emissions are estimated as per equation 1 of AMS-I.E version 09 as follows: $BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil_fuel}$ Where: BE_y = Baseline emissions during the year y in t CO₂e B_y = Quantity of woody biomass that is substituted or displaced in tonnes f_{NRB,y} = Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass (fNRB) NCV_{biomass} = Net calorific value of the non-renewable woody biomass that is substituted (IPCC default for wood fuel, 0.0156 TJ/tonne) EF_{projected_fossil f} = Emission factor for the substitution of non-renewable woody biomass by similar consumers. Use a value of 63.7 t CO₂/TJ
----------------------------	---

	By is determined as per equation 2 of AMS-I.E version 09 as follows: $B_y = N_{HH} \times (BC_{BL,HH,y} - BC_{PJ,HH,y})$ Where: N_{HH} = Number of households in the project activity, number. A cap of 20,000 household is considered in each CPA. $BC_{BL,HH,y}$ = Average annual consumption of woody biomass per household before the start of the project activity, tonnes/household/year $BC_{PJ,HH,y}$ = If it is found that pre-project devices were not completely displaced but continue to be used to some extent, average annual consumption of woody biomass per household in the pre-project devices during the project activity, tonnes/household/year Average annual consumption of woody biomass per household before the start of the project activity, tonnes/household/year ($BC_{BL,HH,y}$) is determined as per baseline survey and if pre-project device is continue to be use $BC_{PJ,HH,y}$ shall be monitored and considered accordingly. Number of households in the project activity (N_{HH}) shall be monitored and reported accordingly. $BC_{BL,HH,y}$ is 5.04 ton/HH/year as per survey report /15/. The survey meets the latest version of the 'standard: sampling and survey for CDM project activities and programme of activities' following 'Guidelines for sampling and surveys for CDM project activities and programme of activities' version 04 in determining sample size. Determination of $BC_{BL,HH,y}$ is consistent with the options provided in the applied methodology AMS-I.E version 09. $f_{NRB,y}$ is calculated as per procedures outlined in tool 'Calculation of the fraction of non-renewable biomass' version 02. The input value and calculation of f_{NRB} has been approved by Ministry of Environment and Forest, Nepal /16/. The value is 86.10%. Total Baseline emissions from one CPA would be = $20,000 \times 89\% \times 4.5 \times 86.10\% \times 0.0156 \times 63.7$ = 68,532.99 tCO₂e. Project emissions: As per the applied methodology, the project does not have any project emissions. Leakage Emissions: The project activities are not meant to use biomass as either fuel or feedstock and therefore, 'tool: project and leakage emission from biomass' is not applicable. In consistent with methodology paragraph 24, leakage emissions (from use/diversion of non-renewable woody biomass saved under the project activity by non-project households/users that previously used renewable energy sources) from the project is accounted multiplying B_y with 0.95 as default. Accordingly, the emission reductions estimated from a single CPA is = $68,532.99 \times 0.95 = 65,106$ tCO₂/year
Findings	N/A
Conclusion	RINA confirms, the PoA-DD correctly lists assumption and data used by the PP for estimating emission reduction including their references and sources. Source of data and assumptions are correctly quoted and interpreted in the PoA-DD. All values used in the PoA-DD are considered reasonable in the context of the proposed CDM PoA. The baseline methodology and corresponding tools have been correctly applied to calculate project, baseline and leakage emissions, and emission reductions.

¹ Ex-ante operational status of number of biogas plants are considered to be 89% as per latest survey report.

	All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PoA-DD.
--	---

G.4. Sustainable Development assessment

Means of validation	The registered GS PoA is already transited to GS4GG and all CPA/VPAs are independently included under GS4GG duly validated and approved by GS. However, as part of renewal of crediting period of the PoA, the assessment of safeguarding principles as per GS4GG has been transparently assessed in section E.2 of the updated PoA-DD as described below: <u>Principle 1- Human Rights:</u> The proposed project activity follows the human rights in accordance with the national legal framework. The project improves the livelihood of rural people and reduces the deforestation due to reduced usage of firewood. The project activity will not be put the human rights at risk. Hence, the project respects internationally proclaimed human rights including dignity, cultural property and uniqueness of indigenous people. The project is not complicit in Human Rights abuses. The project activity involves production of biogas using the biogas digesters and produced biogas will be used in the households primarily for cooking purpose (end use) for the thermal energy needs. Hence, the project does not involve and is not complicit in involuntary resettlement as verified during the site visit. The project activity does not involve alteration damage or removal of any critical cultural heritage as confirmed during the site visit. <u>Principle 2 – Gender Equality and Women’s Rights:</u> Based on the registered GS documentation, including PoA-DD /1/, transition document /13/, review and assessment of the PoA it is evident that the Programme enables the beneficiaries in using clean fuel (biogas) for cooking. Therefore, the activity helps in reducing the time wasted collecting firewood, along with the physical labour. Based on the gender roles it is mostly Women who shall be benefitted from the programme therefore the safeguarding principle is relevant to the programme in a positive manner. However, the CME chooses not to monitor, hence was found acceptable by the assessment team. <u>Principle 3 – Community Health, Safety and Working Conditions:</u> The project biogas system does not involve any hazardous material during construction and its operation. With the biogas system, users have access to cleaner fuel compared to fire-wood. In addition, fire-wood based cooking system has high indoor air pollution and a risk to fire-hazard. In comparison to that, biogas is clean smokeless fuel, and due to its maintained pressure there is no risk of any fire hazard or accident from the project activity. Hence, the project only leads to safe working conditions and improved in health of end users. Therefore, the emission reduction and improve in health condition has been included appropriately in the monitoring plan. <u>Principle 4 – Cultural Heritage, Indigenous Peoples, Displacement and Resettlement:</u> The project is implemented in existing households where the fire-wood usage is replaced with biogas as fuel. This does not involve any damage to cultural heritage or displacement and resettlement and rights of indigenous people. The project activity takes place in households. Hence, this parameter is safeguarded by the project activity. <u>Principle 5 – Corruption:</u> The project involves installation of household biogas plants in rural households which does not require any specific permit or approval from any authority. The end users as owner of biogas system is taking part in the project activity with agreement to project developer to share benefits from the project to be developed as GS
----------------------------	--

	project. Therefore, the project does not have any scope for corruption or corrupt practice. The principle is safeguarded by the project activity. <u>Principle 6 – Economic Impacts:</u> Labour rights & negative economic consequences: The safeguarding principle is not impacted by the CPAs/VPAs` because the project does not impact the local economy. The digesters which are installed are small, have little operation cost and the project is public funded, therefore, the CME is not monitoring. Since safeguarding principle is not impacted, the validation team found it acceptable for CME to not monitor this principle. ENVIRONMENTAL & ECOLOGICAL SAFEGUARDING PRINCIPLES: <u>Principle 1 – Climate and Energy:</u> The project being implementation of household biogas system replaces fire-wood which leads to overall emission reductions. The energy supply is not hampered compared to baseline. <u>Principle 2 – Water:</u> The project involves use of household biogas system which does not need waste in huge quantity. There is no need to extract ground water or the project has requirement to affect the pre-existing pattern of watercourses. Water is only needed to mix with cattle dung to make the intake feed as liquid which is very minimal in quantity. Therefore, the project does not have any negative impact on water. <u>Principle 3 – Environment, ecology and land use:</u> The project involves use of household biogas systems which does not involve any landscape modification or leads to vulnerable natural disasters. It also does not involve any manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials. It leads to negligible pollution (air pollution due to firing of firewood) compared to baseline scenario as the project technology replaces firewood consumption compared to baseline scenario. Hence, the principle is safeguarded by the project activity.
Findings	N/A
Conclusion	RINA confirms that conservative approach has been applied by PP to demonstrate sustainable development of the project activity which is in line with GS4GG requirements.

G.5. Validity of monitoring plan

Means of validation	The monitoring plan in the PoA-DD is consistent with the latest methodology, AMS-I.E Version 09. Validation team confirmed from the document review that the list of parameters including the means of monitoring is described in accordance with the applied methodology. Following are the parameters to be monitored: - The share of digesters implemented that is operational –the parameter shall be monitored CPA wise at least biennially (as part of Biogas User Survey) following sampling approach as per the applied methodology. This parameter shall be used to arrive By value. - Date of commissioning of project device of type i- Actual date of commissioning of any digester included in a CPA shall be recorded in CPA specific database and shall be verified during verification. Commissioning reports shall be used to cross check the actual date of commissioning. - Average annual consumption of woody biomass per household in the pre-project devices during the project activity, if it is found that pre-project devices were not completely displaced but continue to be used to some extent (BC_{PJ,HH,y}) shall be monitored thorough survey at least once every two years (biennial). The result shall be used to determine 'By' during each verification.
----------------------------	---

	The monitoring plan is still same in consistent with the latest methodology and hence valid for the next crediting period. RINA is of the opinion that monitoring plan is feasible within the project design
Findings	N/A
Conclusion	RINA confirms that the monitoring plan included in the updated PoA-DD is valid as per the applied methodology and conforms the registered PoA-DD.

G.6. Validity of the sustainability monitoring plan

Means of validation	Apart from monitoring relevant parameter under SDG 13 as discussed in section G.5 above, parameters pertaining to SDG 7 and SDG 3 are consistent with registered PoA-DD (GS4GG transition annex) /13/. The monitoring plan of those parameters are discussed below:		
	SDG Indicator	Parameter	Validation
	SDG 3.9.1- Mortality rate attributed to household and ambient air pollution	Users' perception on reduction in indoor air pollution	The improvement in air quality perceived by the beneficiaries will be recorded during the conduction of questionnaire-based surveys (Biogas User Survey) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Improvement in air quality can be expected after shifting from conventional fuelwood to biogas, which will release less smoke compared to the baseline fuel. Stating SDG 3.9.1 i.e. 'Mortality rate attributed to household and ambient air pollution' as a relevant SDG indicator is justified because improved air quality within the household will lead to improvement in health of the household members too. Since the applied methodology /07/ demands replacement of firewood with biogas, which has been confirmed in the PoA DD/01/ and CPA DDs of the CDM PoA 9572, reduction in health-related problems should be expected.
		Reduction in health problem	User's perception on reduction in health problems will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Stating SDG 3.9.1 i.e. 'Mortality rate attributed to household and ambient air pollution' as a relevant SDG indicator is justified, since the parameter is directly used to measure how much improvement users perceive to have gained in their health from the CPAs, particularly from reduced exposure to smoke from combustion of the conventional fuel. Since the applied methodology /07/ demands

			replacement of firewood with biogas, which has been confirmed in the PoA DD /01/ and CPA DDs of the CDM project 9572, reduction in health-related problems should be expected
		User's perception in Time saving for the cooking (reduce exposure to indoor air pollution)	Users' perception on time saving due to project (comparing to baseline) and use of the saved time will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Stating SDG 3.9.1 i.e. 'Mortality rate attributed to household and ambient air pollution' as a relevant SDG indicator is justified, since the saved time can be utilised to create a better lifestyle for the users, thus providing for their well-being.
	7.1.2- Proportion of population with primary reliance on clean fuels and technology	Time saving (Fuel wood collection)	Users' perception on time saving due to project (comparing to baseline) and use of the saved time will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. SDG 7.1.2 (Proportion of population with primary reliance on clean fuels and technology) seem to be the most relevant SDG for this parameter.
		Trainings to Masons	Training of the masons will be monitored using the training report which will be maintained regularly. The parameter will be reported at least biennially. This parameter holds relevance in context of SDG 7.1.2, because training of masons will lead to their capacity building, thus securing their future and ensuring more penetration of biogas technology. According to the CDM PoA DD of the project/1/, the Nepal Biogas Promotion Association (NBPA) will be executing skill enhancement packages for the masons
	3.9.3- Mortality rate attributed to unintentional poisoning	Users perception in reduction of chemical fertilizers	Users' perception on reduction of chemical fertilizers due to project (comparing to baseline) will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan.

			Stating SDG 3.9.3 i.e. 'Mortality rate attributed to unintentional poisoning' as a relevant SDG indicator is justified, reduction of use of chemical fertilizer leads mortality rate from unintentional poisoning
	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)	Improved access to sanitation services	Users' perception on connection of toilet to biogas will be recorded during the conduction of questionnaire based surveys (BUS) or any other monitoring survey. The monitoring of this parameter will be done at least once in two years; the households will be randomly selected using the sampling plan. Stating SDG 3.9.2 i.e. 'Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)' as a relevant SDG indicator is justified, since connecting the toilets to biogas digester would encourage usage of toilets over open defecation.
	Safeguarding Principle 4.3.8	Impact on Crop Productivity	Users' perception on impact of CPAs on crop productivity will be recorded during the conduction of questionnaire-based surveys (BUS) or any other monitoring survey conducted by the PP. The monitoring of this parameter will be done at least biennially; the households will be randomly selected using the sampling plan. The safeguarding principle found relevant for this parameter is food. Crop productivity can improve from the usage of composted slurry instead of chemical fertilizers, thus maintaining productivity at a lower cost. Crop productivity can also improve due to time saved by the users which was spent earlier on firewood collection, which can be utilised to focus on the crops
Findings	N/A		
Conclusion	RINA confirms that the sustainable development monitoring plan included in the updated PoA-DD is in consistent with GS principles and requirements and feasible within the project design.		

Appendix 1. Abbreviations

Abbreviations	Full texts
AEPC	Alternative Energy Promotion Center
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CME	Coordinating and managing entity
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CPA	Component project activity
CRT	Coordination and Technical Control Staff
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EF	Emission Factor
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GS4GG	Gold Standard for Global Goals
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
kW	Kilo Watt
LoA	Letter of Approval
MoC	Modalities of Communication
MoV	Means of Verification
MR	Monitoring Report
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PoA	Program of Activities
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation and verification body
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI* QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Hui Feng Liu

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, ITRP

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
8.1	Mining and mineral processes	8
9.2	Iron, steel and Ferro alloy production	9
13.1	Solid waste and wastewater	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)

Responsabile di schema
Scheme Leader
Rita Valoroso

*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

TEC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/ riconosciuto da
RINA Services S.p.A. is accredited/ recognized by

UNFCCC	quali Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects
VCSA	per condurre la Validazione e la Verifica di Progetti VCS to carry out Validation and Verification of VCS Projects
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS to carry out Validation and Verification of GS Projects
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS to carry out Validation and Verification of SCS Reports
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR to carry out Validation and Verification of ACR projects
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB to carry out Validation and Verification of co-benefit CCB projects

CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Cyril Augustus Arokiasamy Amalorpavanathan

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, Local Expert, ITRP

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
3.1	Energy Demand	3
5.1	Chemical Industry	5
13.1	Solid Waste and wastewater	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)
2	09/10/2017	Qualification update as ITRP

Responsabile di schema
Scheme Leader
Laura SEVERINO



*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

TEC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/riconosciuto da
RINA Services S.p.A. is accredited /recognized by

UNFCCC	quali Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects
VCSA	per condurre la Validazione e la Verifica di Progetti VCS to carry out Validation and Verification of VCS Projects
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS to carry out Validation and Verification of GS Projects
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS to carry out Validation and Verification of SCS Reports
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR to carry out Validation and Verification of ACR projects
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB to carry out Validation and Verification of co-benefit CCB projects



CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
We declare that Mr/Ms/Ms:

Champak Buragohain

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, ITR, Local Expert

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1	Thermal Energy Generation	1
1.2	Renewables	1
2.1	Electricity distribution	2
13.1	Solid waste and wastewater	13
13.2	Manure	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)
2	10/10/2019	Qualification update as TEC in TA 1.1

Responsabile di schema
Scheme Manager
Giovanni D'Angelo

*SCHEMI VOLONTARI/VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard

TBC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/recognizzato da
RINA Services S.p.A. is accredited/recognized by

UNFCCC	quali Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects
VCSA	per condurre la Validazione e la Verifica di Progetti VCS to carry out Validation and Verification of VCS Projects
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS to carry out Validation and Verification of GS Projects
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS to carry out Validation and Verification of SCS Reports
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR to carry out Validation and Verification of ACR projects
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB to carry out Validation and Verification of co-benefit CCB projects

GHG_QUAL_CERT_EN_07_16 Voluntary(Certificate)

Page 1 of 1

Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	AEPC	Updated PoA-DD for the PoA 'Nepal Biogas Support Program-PoA' in Nepal	Version 17 of 05/09/2019 (CDM) Version 01 of 12/04/2019 and version 02 of 07/11/2019	CME
2	AEPC	Registered CDM PoA DD for the PoA 'Nepal Biogas Support Program-PoA' in Nepal	Version 14 of 13/01/2013	CME
3	AEPC	Emission reduction worksheet for the PoA' 9572_ER and sample calculation.xlsx'	Version 01 of 12/04/2019 and version 02 of 23/10/2019	CME
4	TUV Sud	CDM Validation report for the PoA 'Nepal Biogas Support Program-PoA- PoA 9572' in Nepal (First crediting period)	Report no. 600500123 dated 31/01/2013	CME
5	RINA	CDM Validation report for the PoA 'Nepal Biogas Support Program-PoA- PoA 9572' in Nepal (Second crediting period)	Version 2.0 Aa of 17/09/2019	VVB
6	UNFCCC	UNFCCC webpage: PoA 9572 : Nepal Biogas Support Program-PoA	https://cdm.unfccc.int/ProgrammeOfActivities/poa_db/7BSCYZMH2U05TWXFJK/ELND18PRQ960/view	Publicly available
7	UNFCCC	Small-scale methodology 'Switch from non-renewable biomass for thermal applications by the user'	Version 09 of 31/08/2018	Publicly available
8	UNFCCC	Validation and verification standard for PoA	Version 02 of 29/11/2018	Publicly available
9	UNFCCC	CDM Project Standard for PoA	Version 02 of 29/11/2018	Publicly available
10	UNFCCC	Methodological tool 'Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period'	Version 03.0.1- EB 66 Annex 47	Publicly available
11	Gold Standard	Principles and Requirements	Version 1.1 of 01/03/2018	Publicly available
12	Gold Standard	Programme of Activity Requirements	Version 1.1 of 01/03/2018	Publicly available
13	Gold Standard	Transition Annex 'Nepal Biogas Support Program-PoA and CPA 1-CPA 5'	Transition review dated 01/08/2018	CME
14	Jean Marie Baland	Jean Marie Baland, "The Environmental Impact of Poverty: Evidence from Firewood Collection in Rural Nepal", Boston University - The Institute for Economic Development Working Papers Series, 30 June 2007	2007	Others
15	Prakriti Consult (P) Ltd.	Biogas user survey 2017/18 for Biogas Support Program-Nepal (BSP-Nepal) Activity-1, Activity-2, Activity-3 and Activity-4	May 2018	CME
16	Ministry of Forest and Environment	Confirmation on fNRB value of Nepal	Letter dated 25/11/2018	CME

Appendix 3. Clarification requests, corrective action requests and forward action requests

Table 1. CR from this validation

CR ID	01	Section no.	G.3	Date: 10/06/2019
Description of CR				
<i>Kindly clarify the appropriateness of using By value as 4.5 ton/HH.</i>				
CME response				Date: 23/10/2019
As given in section I.6.1 of the revised PoA-DD, survey for the similar biogas project activities has been conducted in FY 2017/18 to identify the woody biomass consumption before and after the project activity implemented following the approved sampling and survey methodology for particular project activities. The total woody biomass replaced by the project activities are calculated by deducting the values estimated before and the values estimated after biogas project activities which varies from 4.50 to 4.67 ton/household/year. See section 3.3 of the corresponding Biogas User Survey Reports. Since, established sampling and survey guideline was followed to estimate the value for woody biomass consumption. So, CME confirm that the value for the woody biomass that would be replaced by the PoA is taken as 4.5 ton/HH/year for this crediting period and is appropriate as the demand for the cooking requirement has been increased with the increased life style.				
Documentation provided by CME				
BUS 2017.18_PA_1.pdf BUS 2017.18_PA_2.pdf BUS 2017.18_PA_3.pdf BUS 2017.18_PA_4.pdf				
DOE assessment				Date: 07/11/2019
The value is updated considering latest user survey prior to renewal of crediting period. The survey was carried out covering year 2017-18 which resulted the fire-wood consumption in absence of biogas is 4.5 ton/household per year. Therefore the updated value is accepted for the next crediting period. Hence, CL is closed.				

Table 2. CAR from this validation

CAR ID	01	Section no.	F.5	Date: 10/06/2019
Description of CAR				
<i>Not all eligibility criteria as per the applied methodology is discussed in the PoA-DD</i>				
CME response				Date: 23/10/2019
<i>The applicability of the applied methodology has been discussed as per the AMS I.E Version 9 and corrected accordingly in section I.2 of the revised PoA-DD.</i>				
Documentation provided by CME				
Updated PoA-DD				
DOE assessment				Date: 07/11/2019
CME has updated all applicability conditions in the PoA-DD consistent with the latest methodology and justified the conditions met by the PoA. Hence, CAR is closed.				

Table 3. FAR from this validation

FAR ID	XX	Section no.		Date: DD/MM/YYYY
Description of FAR				
CME response				Date: DD/MM/YYYY
Documentation provided by CME				
DOE assessment				Date: DD/MM/YYYY

